

97-84254-6

Du Pont, Coleman

The highway problem

[Washington, D.C.]

[1918]

97-84254-6
MASTER NEGATIVE #

**COLUMBIA UNIVERSITY LIBRARIES
PRESERVATION DIVISION**

BIBLIOGRAPHIC MICROFORM TARGET

ORIGINAL MATERIAL AS FILMED - EXISTING BIBLIOGRAPHIC RECORD

OCLC: 37677747 Rec stat: n
Entered: 19970924 Replaced: 19970924 Used: 19970924
- Type: a Elvl: K Srce: d Audn: Ctrl: Lang: eng
BLvl: m Form: a Conf: 0 Biog: MRec: Ctry: dcu
Cont: GPub: Fict: 0 Indx: 0
Desc: a Ills: ac Fest: 0 DtSt: s Dates: 1918, +
- 1 040 PR1 *c PR1 +
- 2 007 h *b d *d a *e f *f a--- *g b *h a *i c *j p +
- 3 007 h *b d *d a *e f *f a--- *g b *h a *i a *j p +
- 4 007 h *b d *d a *e f *f a--- *g b *h a *i b *j p +
- 5 049 PR1A +
- 6 100 1 Du Pont, Coleman. +
- 7 245 14 The highway problem *h [microform] / *c Coleman Du Pont. +
- 8 260 [Washington, D.C. : *b National Highways Association, *c 1918] +
- 9 300 [4] p. : *b ill., port. ; *c 33 cm. +
- 10 533 Microfilm. *b New York, N.Y. : *c Columbia University Libraries,
*d to be filmed in 1997. *e 1 microfilm reel ; 35 mm. +
- 11 583 Filmed; *f NEH Project (FMEST); *c 1997 +

RESTRICTIONS ON USE: Reproductions may not be made without permission from Columbia University Libraries.

TECHNICAL MICROFORM DATA

FILM SIZE: 35mm

REDUCTION RATIO: 9:1

IMAGE PLACEMENT: (IA) IIA IB IIB

DATE FILMED: 11-20-97

INITIALS: PB

TRACKING # : 28995

FILMED BY PRESERVATION RESOURCES, BETHLEHEM, PA.

308
Z
Box 307



The HIGHWAY PROBLEM

GENERAL COLEMAN DU PONT

*Chairman Board of National Councillors
National Highways Association, Member
State Highway Commission of Delaware*

*“National Highways
will do more than any
other one thing for
real development and
defense of our country”*

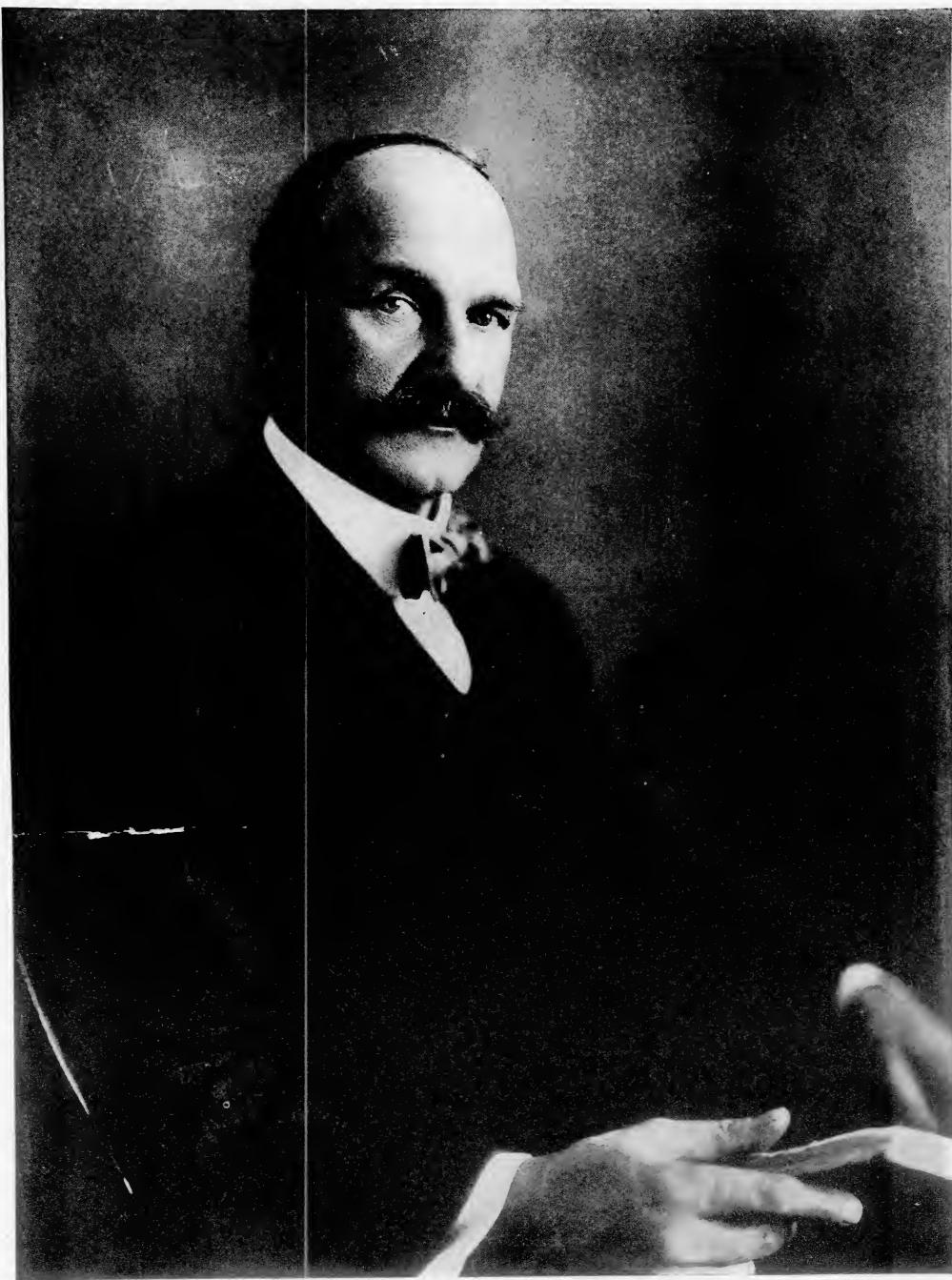
Paraphrased from
Rear-Admiral
W. W. Kimball, U.S.N., Retired

Reprinted from MOTOR LIFE, June, 1918,
for The National Highways Association



MOTOR LIFE and the NATIONAL HIGHWAYS ASSOCIATION take pleasure in complying with the request of the Treasury Department of the United States Government to display in all of its publications the War Savings Stamp Appeal as it appears herewith

MS 128985



A born fighter, aggressive and constructive, General Coleman du Pont has been nearly everything, from a day laborer to the directing head of one of the country's great industries. As a farmer, he learned the value of good roads to every community, and one of his greatest interests is road building. He has undertaken to build and give to the people of Delaware a highway extending from one end of the State to the other. Twenty miles of the highway have been completed and presented to the State.

INTENTIONAL SECOND EXPOSURE



A born fighter, aggressive and constructive, General Coleman du Pont has been nearly everything from a day laborer to the directing head of one of the country's great industries. As a farmer, he learned the value of good roads to every community, and one of his greatest interests is road building. He has undertaken to build and give to the people of Delaware a highway extending from one end of the State to the other. Twenty miles of the highway have been completed and presented to the State.

MOTOR LIFE

JUNE, 1918
Vol. XIII. No. 3

Including
MOTOR PRINT



*Subscription \$3.00 a year in the United States,
\$4.00 in Canada and Mexico, \$5.00 in foreign
countries. Single copies 25 cents in the U. S.
Published at 243 West 39th St., New York City*

The Highway Problem

Centralized Authority Necessary to the Development of National Highways

A NATION is rich and successful and prosperous not in proportion to its natural resources, the timber in its forests, the agricultural land which can be cultivated, the minerals or oils in its mines or wells, but in proportion to the amount of these resources which have been or can be developed.

Few countries are more blessed with natural resources than Mexico, yet Mexico is anything but prosperous.

The United States is often heralded as the richest country in the world. Had we developed all our natural resources to their fullest extent, we should be richer than all the other nations of the world combined.

The one underlying factor which affects all development of natural resources, which is at the bottom of all business, the foundation of credit, the pedestal of commerce, the rock on which prosperity stands, is transportation.

This country was hardly a nation until its east and west, its north and south were connected with railroads. It was the railroad which made southern reconstruction possible and which, sixty years after a war which left the south prostrate, has developed the southland to its present prosperity.

The United States has run the gamut of encouraging, fostering, helping, neglecting and hindering the railroads, and now, for a time, is owning and coddling them. But far-seeing men are beginning to believe, as enthusiasts and dreamers have believed for years, that the future of transportation does not rest entirely with the road of steel, though it is important, but largely with the road of stone. The past decade has developed a new factor in transportation which has as yet received scant consideration from the government. That factor is the motor truck, and it has taken a world war to make Uncle Sam, as an entity, recognize a need which hundreds and thousands of his citizens have been screaming at him for years. That need is roads.

THE United States has never had, and has not now, a road policy. It has dallied with the road question, thrown sops to road enthusiasts, played with the highway problem—and now, for the first time, is beginning to think seriously that it has other angles than local ones, other governmental uses than the provision of one more means of gaining votes. True, the United States maintains as a part of the Department of Agriculture an Office of Public Roads, which has done excellent work. There is also a Federal Aid Law in existence by which the National Government proposes to aid the various states build certain roads. Many states have been more far-sighted than the parent government, and have provided their citizens with good roads, well laid out, properly maintained, which have added greatly to the prosperity of their citizens.

But as a nation the United States has no

GENERAL COLEMAN DU PONT
Chairman Board of National Councilors
National Highways Association
Member State Highway Commission
of Delaware

road policy, recognizes no road question as such, and pays only desultory attention to constructing and maintaining its land highways, while devoting millions to waterways and, in the past, millions to railroads.

That this state of affairs must eventually come to an end is obvious to any who will follow to their logical conclusion the causes which have produced the small road mileage which the nation possesses. The road question was first agitated when the bicycle came into popularity. But the bicycle was not a commercial factor of sufficient power to make any headway against the fact that a nation-wide system of good roads would cost not millions but billions of dollars. The automobile came, small, weak, inefficient and unable to negotiate rough roads, either with comfort to the owner or profit to the merchant, and the good roads demand began to make itself heard. Then the motor truck was developed, and the demand for roads over which it can travel economically and efficiently is becoming louder and more insistent, with the result that many states have given heed and such road systems as those of Massachusetts, Rhode Island, Connecticut, Maryland and Ohio have resulted.

THE nation, as a nation, has done nothing. Had the development of railroads been left to the individual states to foster, should we

*Hard-surfaced roads are urgently needed
for the traffic of 40,000 motor trucks
now in the service of the country*



have a transcontinental line? It seems improbable. Had the states in this time of stress been left to work their legal will upon the carriers, had the railroads been left to continue competition as the primary moving force of their commercial life, would this country have solved its transportation problem of war materials and men?

If the nation can grasp and solve one angle of its transportation problem, for the sake of war efficiency, is there any reason why it cannot grasp and solve that other and equally vital question of roads and trucks?

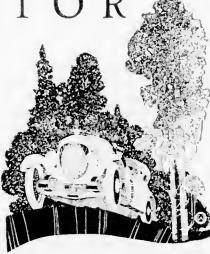
From a military standpoint roads are sharply divided into two classes. First, the road which serves the nation as an aid, a feeder, of its railroads, which takes the burden of the short haul from the steam train, which saves time and money and roundabout routes for the shipper. Second, the road which serves as a distinct military factor for the transportation of men, munitions and supplies, primarily for mobilization, and possibly for actual combat in the—to-be-hoped unlikely—event of invasion of these shores.

At the present time the United States is concerned only with the first angle. Yet an invasion is always a possibility, though not a probability now. Three, even two years ago, it was a possibility but not a probability that we should be drawn into the world war. We elected a president who had kept us out of war and barely six months later backed him to the utmost when he said we were at war. As roads cannot be built in a day, and as mistakes in road planning are tremendously expensive to make, it is certain that, simply because the need of highways for defense purposes is not a present need, it would be foolish to ignore this possibility in any competent well laid out scheme of national road building.

NEGLECTING for the moment the creation of roads, or the improvement of existing roads, for purely defensive purposes, the pressing need of good roads for full utilization of motor trucks for war purposes is vital. The passenger car can negotiate bad roads if it must. The motor truck cannot do so, with any degree of efficiency or profit. We have steel rails for cars simply to get a smooth passage for the wheels of freight and passenger vehicles. It is as impossible for a heavy motor truck to operate economically or efficiently over rough and bumpy roads as for a railroad to carry much freight over a poor roadbed.

We have borrowed heavily from England and France in war experience. It took England years to come to conscription—we did it in months. England and France developed their air resources slowly as the war progressed—we began a gigantic air program with the war less than three months old. We have taken our Allies' experience in troop training, in officer making, in trench fighting, in ordnance

MOTOR LIFE

JUNE, 1918
Vol. XIII. No. 3Including
MOTOR PRINT

Subscription \$5.00 a year in the United States
\$1.00 in Canada and Mexico, \$5.00 in foreign
countries. Single copies 25 cents in the U. S.
Published at 213 West 9th St., New York City

The Highway Problem

Centralized Authority Necessary to the Development of National Highways

A NATION is rich and successful and prosperous not in proportion to its natural resources, the timber in its forests, the agricultural land which can be cultivated, the minerals or oils in its mines or wells, but in proportion to the amount of these resources which have been or can be developed.

Few countries are more blessed with natural resources than Mexico, yet Mexico is anything but prosperous.

The United States is often heralded as the richest country in the world. Had we developed all our natural resources to their fullest extent, we should be richer than all the other nations of the world combined.

The one underlying factor which affects all development of natural resources, which is at the bottom of all business, the foundation of credit, the pedestal of commerce, the rock on which prosperity stands, is transportation.

This country was hardly a nation until its east and west, its north and south were connected with railroads. It was the railroad which made southern reconstruction possible and which, sixty years after a war which left the south prostrate, has developed the southland to its present prosperity.

The United States has run the gamut of encouraging, fostering, helping, neglecting and hindering the railroads, and now, for a time, is owning and coddling them. But far-seeing men are beginning to believe, as enthusiasts and dreamers have believed for years, that the future of transportation does not rest entirely with the road of steel, though it is important, but largely with the road of stone. The past decade has developed a new factor in transportation which has as yet received scant consideration from the government. That factor is the motor truck, and it has taken a world war to make Uncle Sam, as an entity, recognize a need which hundreds and thousands of his citizens have been screaming at him for years.

That need is roads.

THIE United States has never had, and has not now, a road policy. It has dallied with the road question, thrown sops to road enthusiasts, played with the highway problem—and now, for the first time, is beginning to think seriously that it has other angles than local ones, other governmental uses than the provision of one more means of gaining votes. True, the United States maintains as a part of the Department of Agriculture an Office of Public Roads, which has done excellent work. There is also a Federal Aid Law in existence by which the National Government proposes to aid the various states build certain roads. Many states have been more far-sighted than the parent government, and have provided their citizens with good roads, well laid out, properly maintained, which have added greatly to the prosperity of their citizens.

But as a nation the United States has no

GENERAL COLEMAN DU PONT
Chairman Board of National Councilors
National Highways Association
Member State Highway Commission
of Delaware

road policy, recognizes no road question as such, and pays only desultory attention to constructing and maintaining its land highways, while devoting millions to waterways and, in the past, millions to railways.

That this state of affairs must eventually come to an end is obvious to any who will follow to their logical conclusion the causes which have produced the small road mileage which the nation possesses. The road question was first agitated when the bicycle came into popularity. But the bicycle was not a commercial factor of sufficient power to make any headway against the fact that a nation-wide system of good roads would cost not millions but billions of dollars. The automobile came, small, weak, inefficient and unable to negotiate rough roads, either with comfort to the owner or profit to the merchant, and the good roads demand began to make itself heard. Then the motor truck was developed, and the demand for roads over which it can travel economically and efficiently is becoming louder and more insistent, with the result that many states have given heed and such road systems as those of Massachusetts, Rhode Island, Connecticut, Maryland and Ohio have resulted.

THIE nation, as a nation, has done nothing. Had the development of railroads been left to the individual states to foster, should we

Hard-surfaced roads are urgently needed
for the traffic of 40,000 motor trucks
now in the service of the country



have a transcontinental line? It seems improbable. Had the states in this time of stress been left to work their legal will upon the carriers, had the railroads been left to continue competition as the primary moving force of their commercial life, would this country have solved its transportation problem of war materials and men?

If the nation can grasp and solve one angle of its transportation problem, for the sake of war efficiency, is there any reason why it cannot grasp and solve that other and equally vital question of roads and trucks?

From a military standpoint roads are sharply divided into two classes. First, the road which serves the nation as an aid, a feeder, of its railroads, which takes the burden of the short haul from the steam train, which saves time and money and roundabout routes for the shipper. Second, the road which serves as a distinct military factor for the transportation of men, munitions and supplies, primarily for mobilization, and possibly for actual combat in the—to-be-hoped unlikely—event of invasion of these shores.

At the present time the United States is concerned only with the first angle. Yet an invasion is always a possibility, though not a probability now. Three, even two years ago, it was a possibility but not a probability that we should be drawn into the world war. We elected a president who had kept us out of war and barely six months later backed him to the utmost when he said we were at war. As roads cannot be built in a day, and as mistakes in road planning are tremendously expensive to make, it is certain that, simply because the need of highways for defense purposes is not a present need, it would be foolish to ignore this possibility, in any competent well laid out scheme of national road building.

NEGLECTING for the moment the creation of roads, or the improvement of existing roads, for purely defensive purposes, the pressing need of good roads for full utilization of motor trucks for war purposes is vital. The passenger car can negotiate bad roads if it must. The motor truck cannot do so, with any degree of efficiency or profit. We have steel rails for cars simply to get a smooth passage for the wheels of freight and passenger vehicles. It is as impossible for a heavy motor truck to operate economically or efficiently over rough and bumpy roads as for a railroad to carry much freight over a poor roadbed.

We have borrowed heavily from England and France in war experience. It took England years to come to conscription—we did it in months. England and France developed their air resources slowly as the war progressed—we began a gigantic air program with the war less than three months old. We have taken our Allies' experience in troop training, in officer making, in trench fighting, in ordnance

ard field equipment—but what have we done to equal their road and truck development?

Trucks—yes, in quantity. But trucks for French roads, trucks for foreign service. We even proposed to put our trucks on freight cars to carry them from the factories to the ships, because—well, because the roads of this country are such apologies for real highways that, in pre-war days, no one thought of trying to deliver a motor vehicle over the roads on which it must be run.

THE fact that we had not cars and engines enough and that every line of steel rails to the coast was almost hopelessly congested changed this. Our trucks are running over roads from factory to coast and, so far from being hurt by it, our drivers, at least, are gaining valuable experience. But, though the war trucks are standard and able to bear the most severe usage, they cannot carry the load or make the speed here which they can do and will do upon the roads of France.

Years ago England and France solved the highway problem by the creation of national road systems. These roads were built by the nation and maintained by the nation for the use of the nation. Not all roads, by any means, but a comprehensive system of roads running through all important centers, gridironing the country with ready means of communication. To these main roads local communities and the smaller political units built feeders, exactly as in this country, in the "good road States," counties and towns appropriate money and build feeder-roads to connect their localities with the state system.

Had it not been for her system of roads France would have been at a great disadvantage in her war work. Possessing a solid foundation of many good roads at the beginning, France keeps them up and repairs them as they are damaged. The motor truck is as vital behind the lines to the French as the wonderful system of railroads to the German frontier—a system developed by military brains of keen and clever vision long before the motor truck came into existence—is to the Germans.

So far we have done absolutely nothing. Those who point to the fact that we have a highways Transport Committee of the Council of National Defense do so without any real knowledge of what that committee is or does. It has done all and more than it was expected to do. It has worked faithfully and well and produced results, but its function has never been a road-building function—it is not concerned with the laying out of a system of roads, or the building of a single foot of highway.

It has developed plans and put into operation agencies, looking to the utilization of roads

which already exist. It has routed the war trucks and encouraged State Councils of Defense to work for motor truck development. It has educated Chambers of Commerce and Boards of Trade to the need for a Load Clearance Bureau in commercial centers that no motor truck moves "light" over the roads. But what can one small committee, no matter how able, of an organization which is purely advisory in character, such as the Council of Defense, do toward solving the road problem? As well say we need not have a Quartermaster Department to supply soldiers with clothes because women are knitting socks.

The road problem of this country, from any angle—commercial, economic, social, military, defense, political, agricultural, is not a local issue. It cannot be solved by the states. If every state in the Union should have as good a state road system as Massachusetts, national roads would still be a problem. When a man builds a path in his garden he builds it to go where he wants to walk—not where his neighbors wish to walk. When a town builds a road it builds it where the town wants it—not where the next town is best served. When a county builds a road it runs from one end to the county seat, not to serve the next county. When a state builds a road system it connects its important cities and makes it easy for its own denizens, without much thought for the man across the state line. When the United States builds roads, as a nation, it must solve its difficulties by building a system which considers the country as a whole, not as a collection of political units with voters who must be placated.

It is customary to consider the road question from a viewpoint from which one man can see the horizon. Most road propaganda begins and ends with one road. We hear much of the Lincoln or the National Old Trails Road or the National Defense Highway of California. Every one is a worthy road, a road which ought to be what it is not. But the road question as a road question is infinitely bigger than any state, any single road, any single association of people banded together to "get" a certain highway.

The motor truck is to do for commerce what rural free delivery did for the mail. It will make it possible for the farmer and the merchant readily to exchange their respective commodities. The motor truck is to do, in the coming half century, what the railroad did in the last half century. The steam train took a thousand isolated communities, loosely knit under one government, and made them one in fact. The motor truck is to take a million farms and bring them into close touch with the city; it is to take a million merchants and bring

them customers which they never knew before. It is to cut down the high cost of food, by cutting the greatest item of that cost—transportation.

Just before the war it cost more to ship a ton of wheat from farm to railroad than to ship the same ton from New York to Liverpool. It cost more to deliver freight from station to farm than to ship it from factory to station. And roads or the lack of them was responsible.

The road question, the truck question, is a national question. It has two great subdivisions—(1) Where, and (2) What kind?

Neither question can be answered in a hurry. But both can be answered and must be answered soon. If we are not to see the greatest boom which science and invention have given to transportation restricted and made of small account by a penny wise, pound foolish policy, a narrow-gauged peanut-politic viewpoint which wants to spend public money only where local benefits will bring local applause.

“WHERE?" is not difficult to answer. Everywhere eventually, but in the beginning a national road system must consist first of one, then two, then three or more great transcontinental roads from east to west—then half a dozen north and south lines. Later must come connections and additions and interstate roads, until we have, perhaps fifty, perhaps a hundred thousand miles of first-class, high-grade roads running from state to state, not merely, as with our present hundred thousand miles of good roads, in circles within states.

"What kind?" The road builder has answered in a dozen ways in years gone by and is still changing his conclusions. MacAdam was years ahead of his age and years behind this one. The builders of the Appian Way knew more about building a road for a motor truck than MacAdam, strange as it may appear. It is the general opinion among road builders—an opinion greatly quickened and altered by the war—that the light stone road, be it surfaced or oil treated in what way you will, is not the road to build in the face of the avalanche of motor trucks that is coming in the next few years. The motor car brought oil to the road as a necessity. The water bond, which worked so well with iron tires and iron shod hoofs, is useless against the suction of the pneumatic tire. But the oiled stone road that holds the three-thousand pound car with ease, will not carry the five-ton truck—and last.

There is to be a great revolution in road building methods. The railroad has found that for heavy traffic it pays to use the heaviest steel rails and finest wood for ties, the best of broken stone and plenty of it for ballast. No railroad stops at the price per mile nowadays. Once built and well maintained the road will earn dividends.

WE still look upon a highway which costs five thousand dollars a mile as an expensive road, and ten thousand dollars a mile as a boulevard for cities. Yet the road of the future, the road which the motor truck will use, without hurting it, the roads which the national government must build as a national system, will cost twenty, thirty, perhaps fifty thousand dollars a mile. If the latter, and a national highway system of fifty thousand miles is contemplated in a twenty-year building program, then the total cost reaches \$2,500,000.

The cost of such a road program would be distributed over at least twenty years (all the engineers in the country could not build such a system in less time) and the roads would pay dividends as fast as built.

It is difficult to consider the subject and not drop to local angles.

If you see the problem as a national question, if your experience or your knowledge leads you to view the motor truck as the ultimate transportation means for all except long hauls, if you see in it a coming commercial revolution, then you, too, must enlist in the national road army. You must become one of those who believe that Uncle Sam cannot afford for his own sake, as well as for the sake of us, his children, much longer to delay in taking up and solving, as only he can solve, the road question—the question which is greater than the railroads, infinitely greater than the Panama Canal, and which, the war disposed of, must be the most pressing economic problem which this country has to face.

During the war the employment of convict labor on road construction will relieve the labor situation



and field equipment—but what have we done to equal their road and truck development?

Trucks—yes, in quantity. But trucks for French roads, trucks for foreign service. We even proposed to put our trucks on freight cars to carry them from the factories to the ships, because—well, because the roads of this country are such apologies for real highways that, in pre-war days, no one thought of trying to deliver a motor vehicle over the roads on which it must be run.

THE fact that we had not cars and engines enough and that every line of steel rails to the coast was almost hopelessly congested elongated this. Our trucks are running over roads from factory to coast and, so far from being hurt by it, our drivers, at least, are gaining valuable experience. But, though the war trucks are standard and able to bear the most severe usage, they cannot carry the load or make the speed here which they can do and will do upon the roads of France.

Years ago England and France solved the highway problem by the creation of national road systems. These roads were built by the nation and maintained by the nation for the use of the nation. Not all roads, by any means, but a comprehensive system of roads running through all important centers, gridironing the country with ready means of communication. To these main roads local communities and the smaller political units built feeders, exactly as it is this country, in the "good road States," counties and towns appropriate money and build feeder-roads to connect their localities with the state system.

Had it not been for her system of roads France would have been at a great disadvantage in her war work. Possessing a solid foundation of many good roads at the beginning, France keeps them up and repairs them as they are damaged. The motor truck is as vital behind the lines to the French as the wonderful system of railroads to the German frontier—a system developed by military brains of keen and clever vision long before the motor truck came into existence—is to the Germans.

So far we have done absolutely nothing. Those who point to the fact that we have a highways Transport Committee of the Council of National Defense do so without any real knowledge of what that committee is or does. It has done all and more than it was expected to do. It has worked faithfully and well and produced results, but its function has never been a road-building function—it is not concerned with the laying out of a system of roads, or the building of a single foot of highway.

It has developed plans and put into operation agencies, looking to the utilization of roads

which already exist. It has routed the war trucks and encouraged State Councils of Defense to work for motor truck development. It has educated Chambers of Commerce and Boards of Trade to the need for a Load Clearance Bureau in commercial centers that no motor truck moves "light" over the roads, but what can one small committee, no matter how able, of an organization which is purely advisory in character, such as the Council of Defense, do toward solving the road problem? As well say we need not have a Quartermaster Department to supply soldiers with clothes because women are knitting socks.

The road problem of this country, from any angle—commercial, economic, social, military, defense, political, agricultural, is not a local issue. It cannot be solved by the states. If every state in the Union should have as good a state road system as Massachusetts, national roads would still be a problem. When a man builds a path in his garden he builds it to go where he wants to walk—not where his neighbors wish to walk. When a town builds a road it builds it where the town wants it—not where the next town is best served. When a county builds a road it runs from one end to the county seat, not to serve the next county. When a state builds a road system it connects its important cities and makes it easy for its own denizens, without much thought for the man across the state line. When the United States builds roads, as a nation, it must solve its difficulties by building a system which considers the country as a whole, not as a collection of political units with voters who must be placated.

It is customary to consider the road question from a viewpoint from which one man can see the horizon. Most road propaganda begins and ends with one road. We hear much of the Lincoln or the National Old Trails Road or the National Defense Highway of California. Every one is a worthy road, a road which ought to be what it is not. But the road question as a road question is infinitely bigger than any state, any single road, any single association of people banded together to "get" a certain highway.

The motor truck is to do for commerce what rural free delivery did for the mail. It will make it possible for the farmer and the merchant readily to exchange their respective commodities. The motor truck is to do, in the coming half century, what the railroad did in the last half century. The steam train took a thousand isolated communities, loosely knit under one government, and made them one in fact. The motor truck is to take a million farms and bring them into close touch with the city; it is to take a million merchants and bring

them customers which they never knew before. It is to cut down the high cost of food, by cutting the greatest item of that cost—transportation.

Just before the war it cost more to ship a ton of wheat from farm to railroad than to ship the same ton from New York to Liverpool. It cost more to deliver freight from station to farm than to ship it from factory to station. And roads or the lack of them was responsible.

The road question, the truck question, is a national question. It has two great subdivisions—(1) Where, and (2) What kind?

Neither question can be answered in a hurry. But both can be answered and must be answered soon. If we are not to see the greatest boon which science and invention have given to transportation restricted and made of small account by a penny wise, pound foolish policy, a narrow-gauged peanut-politic viewpoint which wants to spend public money only where local benefits will bring local applause.

“WHERE?" is not difficult to answer. Everywhere eventually, but in the beginning a national road system must consist first of one, then two, then three or more great transcontinental roads from east to west—then half a dozen north and south lines. Later must come connections and additions and interstate roads, until we have, perhaps fifty, perhaps a hundred thousand miles of first-class, high-grade roads running from state to state, not merely, as with our present hundred thousand miles of good roads, in circles within states.

"What kind?" The road builder has answered in a dozen ways in years gone by and is still changing his conclusions. MacAdam was years ahead of his age and years behind this one. The builders of the Appian Way knew more about building a road for a motor truck than MacAdam, strange as it may appear. It is the general opinion among road builders—an opinion greatly quickened and altered by the war—that the light stone road, be it surfaced or oil treated in what way you will, is not the road to build in the face of the avalanche of motor trucks that is coming in the next few years. The motor car brought oil to the road as a necessity. The water bond, which worked so well with iron tires and iron shod hoofs, is useless against the suction of the pneumatic tire. But the oiled stone road that holds the three-thousand pound car with ease, will not carry the five-ton truck—and last.

There is to be a great revolution in road building methods. The railroad has found that for heavy traffic it pays to use the heaviest steel rails and finest wood for ties, the best of broken stone and plenty of it for ballast. No railroad stops at the price per mile nowadays. Once built and well maintained the road will earn dividends.

WE still look upon a highway which costs five thousand dollars a mile as an expensive road, and ten thousand dollars a mile as a boulevard for cities. Yet the road of the future, the road which the motor truck will use, without hurting it, the roads which the national government must build as a national system, will cost twenty, thirty, perhaps fifty thousand dollars a mile. If the latter, and a national highway system of fifty thousand miles is contemplated in a twenty-year building program, then the total cost reaches \$2,500,000,000.

The cost of such a road program would be distributed over at least twenty years (all the engineers in the country could not build such a system in less time) and the roads would pay dividends as fast as built.

It is difficult to consider the subject and not drop to local angles.

If you see the problem as a national question, if your experience or your knowledge leads you to view the motor truck as the ultimate transportation means for all except long hauls, if you see in it a coming commercial revolution, then you, too, must enlist in the national road army. You must become one of those who believe that Uncle Sam cannot afford for his own sake, as well as for the sake of us, his children, much longer to delay in taking up and solving, as only he can solve, the road question—the question which is greater than the railroads, infinitely greater than the Panama Canal, and which, the war disposed of, must be the most pressing economic problem which this country has to face.

During the war the employment of convict labor on road construction will relieve the labor situation



**END OF
TITLE**